REMARKS

By this Amendment, claims 42-50 have been cancelled. Claim 51 is amended. Claims 52-63 are newly added. New claim 54 corresponds to cancelled claims 2, 4, and 7. New claim 55 corresponds to previously cancelled claim 8. New claim 56 corresponds to previously cancelled claim 9. New claim 57 corresponds to previously cancelled claim 40. New claim 58 correspond to previously cancelled claim 35. New claim 59 corresponds to previously cancelled claim 36. New claim 61 corresponds to previously cancelled claim 41. New claim 62 corresponds to previously cancelled claim 11. Supports for the new claims 52, 60 and 63 can be found at page 10, lines 4-6 of the instant application. After the amendment, claims 51-63 are presented for further examination. Applicants respectfully submit that no new matter has been added.

Telephonic Interview

Applicants would like to sincerely thank the Examiner for taking the time to discuss this application with Applicants' representatives, Dale Carlson and Wanli Wu on January 21, 2011. While the Office Action seems to suggest that the interview was a personal interview, Applicants confirm that the interview was conducted telephonically.

During the phone interview, the section 112, first paragraph rejection, US Pat. No. 5,540,860 to Hosseini et al., and the pending claims were discussed. Applicants' representatives agreed to further amend the claims for the Examiner's consideration.

Claim Rejections – 35 USC § 112

Claims 2, 4, 6-9, 11, 35, 36, 40 and 41 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Office Action alleges that claim 2 which recites "copper from said copper containing compound" is not supported in the as-filed specification, and states the original disclosure provides support for pyrithion with a "portion of copper".

To expedite the prosecution of the application, all the pending independent claims, namely, 51, 54 and 61 recite pyrithione with "a portion of copper" as suggested by the Office Action. Accordingly, it is submitted that the 112 rejection is avoided.

Double Patenting

Claims 2, 4, 6-9, 11, 35, 36, 40 and 41 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatable over claims of U.S. Patent No. 7026308 to Gavin et al.

Applicants respectfully request that the rejection be held in abeyance until indication of allowable subject matter. At that time, Applicants will revisit the issue.

Rejections under 35 USC §102/103

1. Claims 2, 4, and 6-9 were rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Pat. No. 5,540,860 to Hosseini et al. alone or further in view of the specification and examples to demonstrate inherency. Applicants respectfully traverse the rejection.

Hosseini et al. disclose discrete particles of copper pyrithione and the method of making the same. Nowhere does the reference disclose or suggest any composite particles having a shell and a core, much less as composite particles having a core and shell as recited in the instant claims. Indeed, instead of relying on any specific disclosure of composite particles in Hosseini et al., the Office Action rejected Applicants' claims based on the rationale that the claimed and prior art products are identical or substantially identical in structure or composition because they are produced by identical or substantially identical processes.

The flaw of this rationale is that the claimed and the prior art compositions are not produced by identical or substantially identical processes. Rather, the claimed and the prior art compositions are produced by processes having significant differences.

Specifically, Applicants' claimed composite particles are produced from *substantially insoluble* copper compounds such as surface oxidized copper power, cuprous oxide, copper

hydroxide and/or combinations thereof. During the transchelation reaction, these copper compounds are present as *particles* suspended in the reaction carrier as they are substantially insoluble. Under the reaction conditions of the present invention, some of the pyrithione anions from the soluble pyrithione salt or pyrithione acid chelate with the metal copper on the surface of these copper compound containing particles, thus forming a composite particle with a core of copper, cuprous oxide or copper hydroxide and a shell of copper pyrithione. The structure of the composite particle formed is confirmed by microscopic analysis and is shown at Fig. 2 of the present application.

In contrast, the Hosseini particles are made from a copper salt that is *soluble in the reaction carrier*. (see Hosseini, col. 2, lines 59-60). Since the copper salt disclosed in Hosseini is soluble, in the reaction mixture, it exists as *anions and cations* separated by numerous solvent molecules, ions from the pyrithione salt and/or surfactants. Under the reaction conditions of the Hosseini process, copper pyrithione is formed from copper cations and pyrithione anions. Since copper pyrithione is highly insoluble, once it is formed, copper pyrithione precipitates out from the reaction mixture. The anions and cations of the copper salt, on the other hand, stay in the reaction mixture and are removed when the precipitate (copper pyrithione) is filtered and washed with plenty amount of solvent. Therefore, by utilizing soluble copper salts disclosed in Hosseini as the reactant for the chelation reaction disclosed in that reference, no composite particles are formed, but rather discrete particles of copper pyrithione.

Accordingly, Hosseini et al. teaches away from making any composite particles because the Hosseini reference specifically teaches the use of *a soluble* copper salt to prepare copper pyrithione. A person of ordinary skill in the art will appreciate that the purpose of this limitation is to ensure a complete removal of the soluble copper salt in the later work up process. Thus in light of this teaching, a person of ordinary skill in the art at the time of the invention was made would not be motivated or led to substitute *the soluble* copper salts disclosed in Hosseini et al. with a *substantially insoluble* surface oxidized copper power, cuprous oxide, copper hydroxide and combinations thereof as recited in the instant claims. Accordingly, Hosseini does not disclose or suggest any composite particles or the method of making the same, much less the composite particles having a core and shell structure as recited in the instant claims.

In response to Applicants' comments that Hosseini et al. disclose discrete particles, not composite particles having a core and shell as recited in the instant claims, the Office Action states that Hosseini et al. discloses that dried particles of pyrithione have a shape of "platelets". The Office Action states further that "platelets" as defined by Webster's dictionary is a minute [protoplasmic] disk, which is defined as "round flat plate coated with a [magnetic] substance". Based on the above, the Office Action suggests that Hosseini et al. discloses composite particles having a shell and a core.

As discussed above, Hosseini et al. teaches away from using surface oxidized copper powder, cuprous oxide, or copper hydroxide in the process of making copper pyrithione particles. There is simply no scientific basis to conclude that Hosseini et al. discloses any composite particles having a core consisting essentially of a copper-containing compound selected from the group consisting of surface oxidized copper powder, cuprous oxide, copper hydroxide and combinations thereof because these compounds are not used in the Hosseini et al. process to product copper pyrithione and cannot be generated in-situ during the Hosseini et al. process.

Moreover, although Hosseini et al. disclose paint compositions containing copper pyrithione and copper compounds along with other components commonly used in paints, it is Applicants' position that the teaching of paints containing both copper pyrithione and a copper compound along with other requisite paint components such as resins, solvents, does not disclose or suggest any composite particles. The reason is that there is no force to bring copper pyrithione and copper compound together in paints, particularly in view of the co-presence of numerous other components in the paint, which may intervene the formation of composite particles of any kind, much less the formation of composite particles as instantly claimed.

For at least the above reasons, Hosseini et al. does not disclose or suggest the instantly claimed invention. A withdrawal of the rejection is respectively requested.

2. Claims 2, 4, 6-9, 11, and 41 were rejected under 35 U.S.C. 103(a) as being obvious over Hosseini et al. '860 alone or in view of the specification to demonstrate inherency and U.S. Pat. 5,342,437 to Gavin et al.

As discussed in detail above, there is no disclosure or suggestion in Hosseini et al. of a composition comprising composite particles having a core consisting essentially of surface oxidized copper, cuprous oxide or copper hydroxide and a shell consisting essentially of copper pyrithione. as the Examiner acknowledged in the Office Action, Hosseini et al. does not disclose a fatty acid coating of the shell.

Gavin et al. relate generally to paints and paint bases and disclose the incorporation of fatty acids into pyrithione-containing paint compositions in order to avoid gelation. However, Gavin et al. do not teach or suggest composite particles of any kind, much less of composite particles coated with a fatty acid as claimed in instant claims.

The rejection based on the combination of Hosseini et al. and Gavin et al. references is untenable since the combination of the references does not disclose or suggest a biocidal composition comprising composite particles containing a shell and core, as claimed in the instant application. Specifically, even if a person skilled in the art were to utilize a fatty acid as disclosed in Gavin et al. in the Hosseini process, the particles formed would be in the form of simple copper pyrithione coated with a fatty acid, which is structurally dissimilar from the composite particles as instantly claimed. Accordingly, when viewed singly or in combination, neither reference suggests composite particles of the instantly claimed invention. Therefore, the rejection of the instant claims based upon that combination is believed to be untenable and should be withdrawn.

3. Claims 2, 4, 6-9, 35, 36, and 40 were rejected under 35 USC 103(a) as being obvious over Hosseini et al. '860 alone or in view of the specification to demonstrate inherency and Kappock et al. (US Pat. 5,518,774)

The Hosseini reference which is discussed in more detail above, teaches gel free copper pyrithione particles formed by reacting soluble pyrithione salt and soluble copper salt in an ion-exchange reaction.

Kappock et al. teaches transchelation of copper oxide with a soluble pyrithione salt to produce an insoluble pyrithione salt such as copper pyrithione in a formulated paint composition

to provide in-can preservation during storage of the paint. (See col. 3, lines 12-32) This disclosure does not teach or suggest copper pyrithione in a composite particle having a core consisting essentially of surface-oxidized copper powder, cuprous oxide, copper hydroxide and combinations thereof.

Since Hosseini et al. specifically teaches the use of soluble copper compound and it is well known that copper oxide is an insoluble compound, there is no motivation for a person skilled in the art to substitute the soluble copper compound required by Hosseini et al. process with an insoluble copper compound such as copper oxide disclosed in Hosseini et al. Doing so would run counter to the specific teachings of Hosseini et al.

Further, contrary to the assertion of the outstanding Office Action, the "dry-film" and the "in-can" preservation property of the Kappock compositions is not attributable to the presence of copper oxide, rather it is due to the presence of soluble pyrithione in the composition and the insoluble pyrithiones formed thereafter. Accordingly, a person skilled in the art would not be motivated or led to modify the Hosseini particles in view of the teaching of Kappock or to combine the teachings of Hosseini et al. and Kappock et al.

Accordingly, Applicants respectfully submit that this rejection is untenable and should be withdrawn.

3. Claims 2, 4, 6-9, 35, 36, and 40 were rejected under 35 USC 102(e) as being anticipated by Mohseni et al. (US Pat. No. 6,465,015).

4. Claims 2, 4, 6-9, 11, 35, 36, 40, and 41 were rejected under 35 USC 102(e) as being anticipated by Polson et al. (US Pat. No. 6,017,936).

U.S. Patent 6,465,015 to Mohseni et al. and U.S. Patent 6,017,936 to Polson et al. are cited as 102(e) references in the Office Action. However, it is respectfully submitted that neither Mohseni et al. nor Polson et al. qualify as prior art under subsection 102 (e) as alleged in the outstanding Office Action. The reason is that **the instant application 10/077,727 and patent 6,465,015 and 6,017,936 were, at the time the invention of instant application 10/077,727 was made, commonly owned by the same corporate entity, namely, Olin Corporation, a**

predecessor of current Assignee, Arch Chemicals, Inc. Accordingly, subsection (e) of Section 102 is not properly utilizable for purposes of qualifying Mohseni et al. and Polson et al. as prior art vis-a-vis the instant claimed invention.

5. Claims 2, 4, 6-9, 11, 35, 36, 40, and 41 were rejected under 35 USC 103(a) as being obvious over Morris et al. (U.S. Pat. No. 5,916,947) in view of Hosseini (U.S. Pat. No. 5,540,860)

U.S. Patent 5,916,947 to Morris et al. discloses an antifouling coating composition containing zinc oxide with has been surface coated by photosensitizer(s) which increase the capability of zinc oxide to absorb visible light. Morris et al. does not disclose or suggest any composite particles having a core comprises essentially of a copper-containing compound, and a shell consists essentially of copper pyrithione formed from a transchelation reaction.

Zinc pyrithione is used in Morris et al. as a photosensitizer. There is no motivation for a person skilled in the art to replace zinc pyrithione disclosed in Morris et al. with copper pyrithione disclosed in Hosseini because nowhere does Hosseini teach that copper pyrithione is a photosensitizer. Moreover, there is no motivation to replace zinc oxide disclosed in Morris et al. with the copper salts disclosed in Hosseini because zinc oxide is used in Morris as a means to produce hydrogen peroxide, and there is no teaching in either Hosseini or Morris that a copper compound can be used for the same purpose. Accordingly, there is no motivation to combination Morris and Hosseini, much less in the way suggested by the Office Action. A withdrawal of the rejection is respectfully requested.

In view of the above discussion, it is respectfully submitted that the application is now in condition for allowance. Therefore, Applicants respectfully request consideration of the newly submitted claims, and an early receipt of a Notice of Allowance of the claims as amended.

Any fees due with this Reply may be charged to our Deposit Account No. 23-1665 under Customer Number 27267.

Respectfully submitted,

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